

Force Health Protection



Healthy and Fit Force
Casualty Prevention
Casualty Care and Management





EXECUTIVE SUMMARY

*This document presents a vision for Force Health Protection (FHP) as the set of future health programs that protect America's fighting forces. FHP is a "total life-cycle" health support system paralleling the concept of focused logistics described in Joint Vision 2010, an integrated and focused approach to protect and sustain DoD's most important resource—its service members and their families—throughout the entire length of service commitment. FHP's three interrelated pillars (promoting and sustaining a **healthy and fit force**, illness and injuries **casualty prevention**, sustaining a world-class **casualty care and management** system) and the infrastructure activities that underpin them will change the nature of medical operations on the battlefields of the future.*

FHP takes full advantage of service strengths while also supporting joint standards, doctrine, and operations. This requires maximizing the effectiveness of the services' medical elements through jointly coordinated, comprehensively planned, and mutually supportive medical operations.

FHP provides life-cycle health support to members when they enter into the service and continues for the duration of their military careers. It supports service members with a full spectrum of health services that

- *emphasize fitness, preparedness, and preventive measures;*
- *improve the monitoring and surveillance of threats and forces in military operations;*
- *enhance service members' and commanders' awareness of health threats before they can affect the force; and*
- *support the health needs of the fighting forces and their families across the continuum of medical services.*

Force Health Protection is a significant change of direction. To support FHP concepts, medical assets must be reconfigured to support essential care of the injured and ill in theater and their rapid evacuation for definitive medical care. Innovative leveraging of emerging technologies coupled with logistical and information superiority will make operational medical forces more capable of meeting future requirements. They will be smaller, rapidly deployable, more effective, and more technologically advanced. Change of this magnitude will require concerted effort by all services and must be implemented jointly.

The steps necessary to achieve FHP's objectives have been identified by 11 Joint Staff-sponsored functional medical work groups. Those groups identified gaps between today's medical force capabilities and those required to support FHP concepts. They also produced an FHP roadmap with timelines and milestones, which is included as a supplement to this document, and a prioritized summary of "Force Health Protection Critical Success Factors," included at Appendix A. The functional medical work groups will continue to define requirements in support of future medical concepts and operations. The military health system of the future must support the evolving national military strategy and the strategies and tactics of the 21st century. FHP is the roadmap to that future health support.

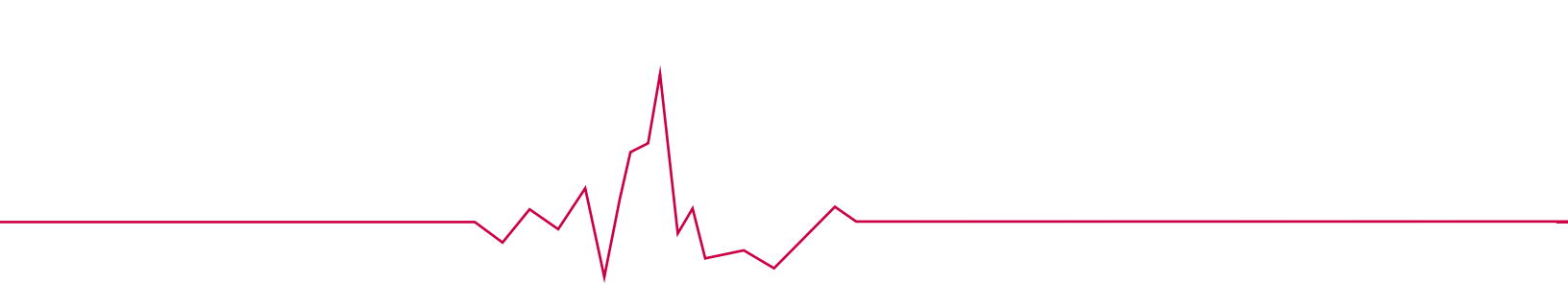


This Force Health Protection capstone document was prepared under the sponsorship of the Medical Readiness Division, J-4, The Joint Staff.



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The goal is to provide a
fit and healthy force when
and where the mission
requires it...





Chapter 1

INTRODUCTION

The end of the Cold War has resulted in a significant change in the way the U.S. military must address the issue of health in its operations. Remote sustained deployments have increased in number and frequency, and we are satisfying those taskings with a smaller force. To meet these operational requirements, we are relying more heavily on a deployed force comprised of both active and reserve components, with an increasing proportion of the deployed service members coming from the reserves. In short, our forces are more active, mobile, and scattered than they were in the past, and they are also more reliant on “jointness” and partnerships with others. The fitness of our forces for duty is becoming more important and more complicated than ever.

This capstone document provides a foundation for *Force Health Protection (FHP)*, a strategy that describes the integrated preventive and clinical programs that are designed to protect the “total force.” The goal of FHP is to provide a fit and healthy force when and where the mission requires it while simultaneously adapting the medical forces to be more technologically advanced, smaller, and more mobile. FHP represents a significant departure from conventional combat medicine because it

- institutes programs to develop and support healthy and fit service members and families,
- emphasizes prevention of injury and illness while maintaining an exceptional casualty management system, and
- employs concepts that call for only essential care in the theater and evacuation to definitive care outside the theater of operations.

The Strategic Context of Force Health Protection

The U.S. military has confronted (and surmounted) formidable challenges in the past decade. However, we now face an extraordinary new set of challenges as a result of that success.

Since the end of the Cold War, we have faced significant reductions in budgets and forces. Our forces have incurred a more active opera-

tional tempo and also have become more flexible, smaller, and more lethal, thanks to technological progress. Jointness and interoperability of America’s military forces allow us to satisfy the need for greater flexibility in military planning and operations with those smaller forces and budgets. A significant new challenge will be to protect and maximize the performance of the limited numbers of highly trained individuals of the future force using every possible FHP method. Avoiding all preventable losses of combat and support personnel is critical to mission success.

Despite those challenges, the resounding message echoing from the nation's recent past is that America's fighting forces are the best they have ever been—and are the best in the world. To build on the military's present superiority, joint planners have formulated new doctrine—Joint Vision 2010 (JV 2010)—which expands on several key ideas to provide an integrated, cohesive, and future-oriented platform for continued improvement in U.S. military capacity. These key ideas—*dominant maneuver*, *precision engagement*, *full-dimensional protection*, and *focused logistics*—each hold broad implications for the military health system. To understand and embrace those implications, joint medical planners have created this document—a vision statement for the future of military medicine, called *Force Health Protection*.

Force Health Protection and Military Medicine

The most valuable, most complex weapon systems the U.S. military will ever field are its soldiers, sailors, airmen, and marines. These human weapon systems require life-cycle support and maintenance just as other less complex weapon systems do. FHP is that life-cycle health maintenance program for the human weapon system.

FHP encompasses a full spectrum of operational medical concepts designed to establish future benchmarks for the military health system in response to the challenges of JV 2010. It endorses or proposes several fundamental changes in the way military medicine supports America's warfighters, and it builds

on the technological and doctrinal progress implicit in JV 2010.

In the future, the U.S. military will increasingly integrate its operations with other organizations and nations. JV 2010 makes that integration apparent, and FHP provides further context for interorganizational clinical and preventive operations. This integration implies increasing contact between the U.S. military, U.S. civil agencies, foreign governments, and nongovernmental organizations, all of which will influence the development and execution of future FHP operations.

FHP is about much more than clinical medicine. First and foremost, FHP involves enhanced methods of *preventing* casualties before, during, and after a military operation. It does this through a *full spectrum of health services* that

- emphasize fitness, preparedness, and preventive measures;
- improve the monitoring and surveillance of threats and forces engaged in military operations;
- enhance service members' and commanders' awareness of health threats before they can affect the force; and
- support the health needs of the fighting forces and their families across the continuum of medical services.

In this way, FHP is the catalyst for a fundamental reorientation of military medical forces—toward proactive, preventive services

that strive to prevent casualties. This bears repeating: casualty *prevention* is a primary focus of FHP.

In addition to its focus on prevention, FHP provides a major shift in the care and management of casualties. The linchpin of the new concept is delivery of essential care in theater and evacuation to definitive care outside the theater of operations. Supporting this new concept is a transportable theater hospital deployed in proximity of a major transportation hub to allow easy access to evacuation assets. Forward responders and forward resuscitative surgery complemented by enhanced evacuation capabilities will provide uninterrupted care from point of injury or ill-ness to definitive care.


FHP builds on another JV 2010 concept as well. Information superiority—one of the key enablers of JV 2010—is a driving force in FHP, which uses information to improve preventive measures, speed evacuation, and reduce the battlefield footprint of the medical force to its minimum essential level.

Thus, FHP is about preventing medical threats from affecting military forces. It is

designed to improve existing health; proactively address medical threats; and, finally, provide care for any illness or injury that does occur. FHP is described in Chapter 2 in terms of three “pillars,” but the individual medical support concepts are so inextricably linked that successful FHP development must proceed in a way that the pillars rise in a balanced and planned manner.

Conclusion

Force Health Protection represents a significant change over past health service support concepts. Dramatic adjustments to military medicine have occurred during the past decade, but the future promises even more change. The emphasis on preventive care is of historic proportion, as is the swift acceptance and use of advanced medical technologies. Those technologies, in turn, serve as enablers for other exciting opportunities—en route care; global monitoring to improve commanders’ awareness of medical threats and conditions; and support services that are transformed by technology to become more responsive, better targeted, and less costly.



Each of the FHP pillars
must be in place and
operating smoothly
during peacetime and
in contingencies.





Chapter 2

FHP: THREE PILLARS, ONE INFRASTRUCTURE, ONE PROGRAM

Force Health Protection broadens and deepens the interrelationship between military medicine and the fighting force it supports. Once confined largely to acute post-casualty care, medics now are shaping a future role in all aspects of health protection. To understand that role, this chapter and the rest of this capstone document explores in greater detail the three interrelated pillars—a *healthy and fit force*, *casualty prevention*, and *casualty care and management*—and the *infrastructure* activities that underpin them.

A Healthy and Fit Force

A healthy and fit force is the necessary precondition for all other elements of FHP. Its importance cannot be overstated. The most important weapon system in the U.S. military is people, and their health and fitness is the basic guarantor of military success at all levels of engagement.

A healthy and fit force supported by the preventive components of psychological, physical, and occupational health requires a number of programs and components for its success. Physical fitness training, health promotion programs, family support services, occupational health programs, periodic health assessments, stress management, and TRI-CARE managed care programs for all DoD beneficiaries are the building blocks for a healthy and fit force. Each of those elements must be in place and operating smoothly both during peacetime and in contingencies. Each must be fully engaged with service members and their families. Chapter 3 of this capstone review covers the healthy and fit force programs in more detail, and it defines their interrelationship with other pillars and infrastructure services.

Casualty Prevention

The military forces of 2010 will experience an incredibly wide range of military environmental conditions, facing threats—including natural ones—that are far more diverse and insidious than those faced by the traditional armed forces of the Cold War.

Casualty prevention concentrates on countering two types of threats. The first type, environmental and occupational health hazards, is composed of a complex bundle of environmental and operational factors that combine to produce the largest number of military casualties—those caused by disease and non-battle injury (DNBI). The second threat is that posed directly by the enemy, which usually produces smaller numbers of more serious casualties.

To reduce the DNBI threat, FHP calls for improved global medical intelligence; a system for conducting and maintaining continuous surveillance of the force and the DNBI threat; and actively applied countermeasures, including vaccines, chemoprophylaxes, and environmental preventive measures. The success of these measures, in turn, directly

depends on the active involvement of commanders and service members at all levels.

To counter the second threat, the enemy threat, JV 2010 calls for active application of “systems of military systems” to reduce enemy capabilities before casualties can be inflicted. Also, geographic dispersion of forces and improved personal protective and concealment systems will prevent injuries while maintaining the lethality of U.S. forces.

Successful casualty prevention also requires an understanding of the changing nature of deployed forces. The old notion that deployed military forces are primarily composed of healthy, very young males is only partly valid today. Based on an increased presence of reserve components and civilian contractors, and the greater diversity of skills filled by female service members, tomorrow’s deployed forces will be somewhat older, more representative of the civilian population, and much more diverse. FHP must accommodate that change. Chapter 4 of this document defines casualty prevention in greater detail.

Casualty Care and Management

The third pillar of the FHP strategy builds on the traditional strengths of military medicine: using new technologies and mobility to achieve a lighter, faster, more responsive medical capability. The major components of casualty care comprise a continuum of essential care to stabilize the casualty in theater. The continuum begins with the “first responder” supporting basic prevention and caring

for both DNBI and combat casualties as quickly and as close to the point of injury as possible.

Linked to first responder techniques to locate casualties are prehospital treatments designed to initiate life- and limb-saving essential care, and forward resuscitative surgery designed to triage, resuscitate, and prepare casualties for evacuation to theater hospitals. Theater hospitals will be of modular design and consist of more robust “core” segments and, when required, mobile “breakout” segments.

Finally, all the components are fused together into a continuum of essential care by a critical-care-capable evacuation system able to maintain essential care during all phases of evacuation supported by improved communications and evacuation management systems.

This strategy enables planners to reduce the lift requirements for medical forces in theater but may increase the casualty evacuation requirements out of theater. Chapter 5 of this document defines casualty care and management more completely.

Infrastructure and Support Services

Infrastructure support—the research and development, information systems, logistics services, and training that provide the foundation of FHP—also is undergoing dramatic changes in response to JV 2010. Research and development is increasingly linked to threat-based operational capabilities identified by the Commanders in Chief (CINCs).

Information systems will be tailored to satisfy the requirement that medical forces in theater be smaller, lighter, and more flexible than most medical settings.

Logistics services, meanwhile, will increasingly use commercial practices to reduce expensive inventory investments, speed resupply, and more rapidly respond to evolving military situations. All of this will allow the ability to have total asset visibility.

Finally, training will require more intensive, flexible, and technologically enabled packages to provide full situational training to all levels of care providers and preventive forces.

All infrastructure support services will become more joint and more responsive as military needs continue to evolve. FHP infrastructure support is discussed further in Chapter 6.

Cultural Change and Force Health Protection

FHP is not just about a medical team caring for the force. To succeed, the concept of FHP must be understood and implemented by commanders, service members, planners, and even the public. FHP offers a suite of tools, techniques, and guidelines, but success requires the involvement of *much* more than just the medical force. Medical personnel play a key role in all elements of FHP, and they will continue to deliver world-class medical care, but the pillars of FHP go beyond their capabilities alone. FHP proposes a true partnership of line and medical elements,

with medical personnel in the lead for FHP training, educating, monitoring, and providing medical services, and with commanders and service members providing command enforcement, commitment and engagement.

Cultural change within the military medical system will be just as necessary as FHP becomes reality. One look at today's medical force structure reveals its dominant paradigm: post-casualty acute medical care with a very limited emphasis on preventive and monitoring services. Consequently, a great deal of work remains to be done within the medical community during the maturation of the FHP program. The likelihood is that FHP will require adjustments in force structure, concepts of employment, information systems, and other domains—all of which are addressed in Appendix A, "Force Health Protection Critical Success Factors."

There is one more area in which cultural change is required: the infrastructure needed to support all three pillars of FHP must mature and focus on the battlefield of the future. While all infrastructure elements have changed considerably in the preceding decade, most of that change has occurred in the context of existing doctrine and military operational concepts. As the doctrine and operational concepts change in the near future, complete rethinking of infrastructure requirements will be necessary. For example, logistical and information requirements today focus on sustaining a large hospital base providing definitive subspecialty care in theater. As evacuation requirements increase and definitive care is provided outside the theater, support requirements will change dramati-

ly. Moreover, as the state of the art in clinical practice continues to evolve rapidly, infrastructure services will also be transformed. Changes in practice from intervention to prevention, from locally determined to benchmarked best practices, and from invasive to non- or minimally invasive measures will change infrastructure support requirements. Cultural change may pose the most significant challenge of all in achieving FHP goals. Technological means exist today to

meet most FHP requirements, and technical solutions for the remaining requirements are on the horizon. Likewise, military leaders will accomplish the organizational and structural changes as integral components of JV 2010. But changing the cultural values and ideals of medical professionals, the forces they support, and the public will require concerted effort and clear description of the benefits of, and need for, FHP.





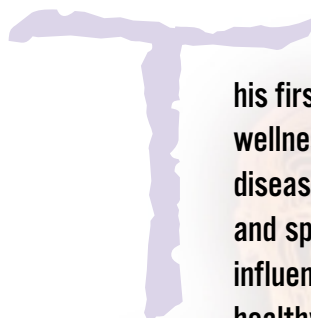
Promoting wellness and
ensuring quality of life
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Chapter 3

A HEALTHY AND FIT FORCE



This first pillar of FHP supports warfighting commanders with a healthy and fit force. Promoting wellness and ensuring quality of life to strengthen the human component of our forces against disease and injury provides a healthy and fit force that is mission-ready and reliable in body, mind, and spirit. Fit and healthy personnel are more resistant to illness, less prone to injury and the influence of stress, and better able to quickly recover should illness or injury occur. Creating a healthy and fit force starts at entry to the service. Maintaining such a force requires both a commitment from individual service members and commanders plus a sustained effort from the entire spectrum of military health services before, during, and after deployment—through to retirement.

Personnel in a healthy and fit force maintain and improve the health of their bodies and minds in a supportive environment. Developing a healthy “body” requires attention to physical fitness, injury prevention, disease prevention, nutrition, and dental health. Service members with a healthy mind maintain their cognitive, behavioral, emotional, and spiritual health. Finally, a supportive environment provides the means for individuals to achieve health goals by including occupational and environmental health as well as aspects of community and family relationships.

DoD’s leaders have established high standards for the fitness of operational forces. Commanders must plan to have the members of their units attain and maintain those standards. Medical forces must refocus their resources on supporting commanders’ efforts to build a fully fit force. Implementation of these concepts will assure the CINCs they will have an operational force with an unsurpassed level of fitness for the highest overall military capability and effectiveness.

Body

Physical Fitness

The five components of physical fitness include cardiovascular strength, muscular strength and endurance, flexibility, body composition, and agility. Meeting ambitious goals for the ability of military members to engage in vigorous activity and demonstrate a high level of capability in all five physical fitness components requires

- adoption of scientifically valid, mission-oriented, physical fitness standards and objectives;
- positive recognition and incentives for meeting the standards and objectives; and
- inclusion of training on the importance of exercise in the physical fitness curriculum of all military schools.

Use of data from physical exams, illness and injury reports, self-assessments of health such as the Health Enrollment Assessment Review (HEAR), and the results of future testing will allow the assessment of the five components of physical fitness. These data will provide the basis for analyzing trends in the level of physical fitness readiness of the operational force.

Injury and Disease Prevention

Effective injury and disease prevention strategies reduce the incidence and prevalence of injury and disability and keep personnel available for mission duty. Prevention of injury and disease requires commanders and service members to modify risky behavior and to use preventive medicine tools and resources, with the goal of reducing or minimizing the impact of injury and disease on mission effectiveness. Success depends on commanders who understand and execute their responsibility to safeguard and promote the health and readiness of their units.

Reaching the goal of reduced injury and disease incidence to maintain the highest possible level of effectiveness will require

- identification of injuries and diseases having the greatest effect on mission readiness for application of specific prevention strategies;
- comprehensive injury and disease surveillance, safety programs, and data analysis to provide policymakers, commanders, and service members with recommendations to minimize the effects of preventable injury and disease; and

- support of technological advances such as improved telemedicine capabilities, development and administration of immunizations, prophylactic countermeasures, biological and chemical dosimeters, screening tools for identifying injury-prone members, fitness training and equipment available to service members in deployed locations, and integrated disease intelligence systems.

These will strengthen the ability of line commanders to meet unit health responsibilities.

Performance metrics in support of disease and injury prevention will be based on comprehensive surveillance at all levels—unit, service, and DoD-wide—of reported injuries and diseases and their relation to readiness levels.

Nutrition

A healthy and fit operational force will eat foods that maximize performance, maintain long-term good health, and sustain morale. Individual food choices and eating behaviors are powerfully influenced by the food preferences of others in the community, unit, and immediate family. Attaining the goal of military members eating the types and amounts of foods meeting operational needs and in line with U.S. dietary recommendations will require

- influencing food preferences to ensure mission needs will be met without sacrificing morale;
- developing a food-related logistics support system with features such as automated recipes for popular and healthy dishes, a

well-trained food preparation staff, and a supply system providing enough healthy ingredients;

- education of commanders, service members, and food service staff about mission-specific nutrient requirements and the strategies that will ensure eating habits will not adversely affect mission accomplishment;
- discouraging the use of nonproven nutritional remedies, body-building drugs, and fad diets and supplements;
- implementing scientifically based weight control programs meeting physical fitness principles; and
- researching and analyzing the optimal nutrient, fluid, and body composition requirements for special unit operations and the body's use of nutrients.

Metrics used to monitor progress include the use of medical system models and data to capture and track consumption information and body composition measurements. Physiological indicators and self-reported survey data are additional sources of progress data.

Dental Health

Dental health and fitness is an important component of overall personal health. The discomfort and pain of dental disease can cause serious interference with service members' ability to focus on mission-essential tasks. Meeting goals for reduction in the

need for treatment of tooth decay, disease, and prosthodontics will be accomplished through strategies including

- using vaccines and pharmacological agents to minimize oral disease and fluoridation of DoD installation water supplies and
- identifying individuals at high risk for dental emergencies, reducing member use of tobacco, performing periodic oral cancer screenings, and promoting the use of oral protective devices during contact sports.

Standardized DoD dental systems will be used to measure disease and treatment levels and to determine whether DoD's Dental Classification System is an adequate predictor of dental emergencies.

Mind

A fit and healthy mind integrates cognitive, behavioral, emotional, and spiritual health and assists individual service members in adjusting to the rigors and stresses of military service with its long hours, realistic training, and actual deployments. Personnel who have strong coping skills and healthy personal and family relationships are better able to focus on mission requirements when necessary. The goal associated with a healthy mind is to encourage a culture of lifelong learning that will strengthen personal, interpersonal, and on-the-job competence; integrate spiritual health; and reduce dependence on alcohol, nicotine, and drugs. This strategy involves

- identifying high-risk individuals early,

- providing psychosocial programs to improve self-management skills and develop appropriate behaviors,
- increasing awareness of individual strengths and group capabilities,
- shifting the focus from tertiary care to primary prevention, and
- using community resources.

Training efforts should provide increased emphasis on life skills training for all military members, including conflict and anger management, code of conduct compliance, and ethics and values adherence at accession and throughout careers. Implementation of specific types of training that will aid mission accomplishment include training in stress and performance, combat and battle fatigue, substance abuse, depression avoidance, family abuse and violence prevention, and family separation and couples communication.

Analyses of health appraisal data and outcome data to compare service and civilian community data will be used to benchmark progress.

Supportive Environment

A supportive environment encompasses commitment from the community of individuals, families, units, installations, and infrastructure systems as well as occupational and environmental health programs supporting the military mission. These provide a support structure enabling service members to perform their mission without being distract-

ed by concerns about the safety, security, and well-being of their families or themselves. A supportive environment strategy embraces military culture encouraging risk recognition, help-seeking behavior, and delivery systems with an array of services supporting individual, family, and community needs.

A supportive environment also includes occupational and environmental health maintenance. This requires identification and control of physical, chemical, and biological risk factors to minimize exposure to hazards, maintaining health and safety at work sites and in the general environment. A prevention component common to both is the ability to objectively monitor work site and general environmental risks and exposures.

Exposure-monitoring results provide an objective basis for preventive medicine and clinical medicine physicians and nurses to perform medical surveillance for early discovery of adverse effects of exposure. Service members and unit commanders who actively participate in occupational and environmental health maintenance can easily transfer practical knowledge and experience about recognition and control of hazardous exposures gained during predeployment training to deployment operations.


Creating a supportive, safe, and healthy environment by the year 2010 and supporting commanders with operationally significant exposure risk assessments will require

- developing a reliable survey tool to assess the community's climate and integrating support services and appropriate training to address survey findings;

- promoting physical and emotional health at home, in the community, and in the workplace;
- training the forces to recognize, evaluate, and control exposure to hazards, which requires emphasis on total hazard exposure monitoring and development of scientific technologies for measuring and recording exposures, in conjunction with training of individuals to assess and respond to potential risks;
- continuing to work with the developers of military materiel to identify and control the health hazards that can be associated with the robust, powerful, high-technology weapons and equipment of the next century; and
- educating reserve component service member employers about the value of these individuals to national security goals and the need to support them in their military duty.

Conclusion

Establishing the first pillar of FHP, the healthy and fit force, will take a concerted effort by service members, commanders, and the healthcare team. The human component of our operational forces must maintain a constant high state of health readiness. To achieve and maintain this high level of readiness requires a strong and healthy mind and body in a supportive environment. Promoting wellness and preventing illness and injury are key components of a healthy and fit force. FHP will provide a life-cycle health support system upon entry into the service and support the service member and family throughout their career.



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Chapter 4

CASUALTY PREVENTION

Implementation of the second pillar of Force Health Protection prevents casualties from environmental, occupational, operational, nuclear, biological, and chemical warfare threats.

Casualty prevention, a force-multiplying tool for commanders, is essential throughout the health life cycle of service members. Before deployment, good health requires control of environmental and occupational threats to prevent casualties and help maintain a healthy and fit force. During deployment, the enemy and the “total” environment both generate threats to the forces. The enemy threat produces most *combat-related* casualties commonly called battle injuries (BI), while the total environment threat produces *disease and non-battle injury* (DNBI) casualties. DNBIs historically have accounted for three-quarters or more of battlefield admissions (69 percent in Vietnam, over 95 percent in World War II and Somalia). Prevention of DNBI casualties requires the full commitment of individual service members and unit commanders. Medical unit support for preventing DNBIs will include refined military medical surveillance and objective exposure measurements to identify DNBI threats, determine effective methods of threat assessment, and develop countermeasures to meet actual and potential threats.

Prevention of DNBI casualties historically has focused on reducing or eliminating the risk of food-, water-, waste-, and insect-borne illnesses, and heat and cold injuries during deployments. However, Operation Desert Shield/Desert Storm demonstrated the need to also place a much greater emphasis on environmental and occupational exposures, combat stress, and non-battle injuries.

Casualty prevention is a continuous life-cycle process conducted during predeployment, deployment, and post-deployment phases. Comprehensive, continuous military health surveillance, including collection, analysis, and recording of objectively determined exposure levels, is necessary to counter these nonenemy threats, which can dramatically affect the health of military personnel. Following several fundamental tenets of casualty prevention will lower DNBI rates and sustain the health and fitness of the fighting force. These tenets are described in the following sections.

Control of Disease and Non-Battle Injury Is a Command and Individual Responsibility

Virtually all DNBI prevention is done through the actions of individual service members and commanders to control or

eliminate the threats. Medical personnel identify potential threats, develop courses of action, and advise commanders of the risks and threat countermeasures. Commanders must decide how they will use the advice and ensure that their units carry out the actions required.

To enhance DNBI prevention, the services should develop and employ realistic training scenarios with some level of DNBI casualties to exercise the prevention principles required of individuals and unit commanders.

Identifying Preventable Threats and Implementing Countermeasures

Preventive medicine competencies and training must elicit continuous command interest. Combatant commanders must ensure preventive medicine supplies and equipment are provided and maintained to support implementation of their prevention responsibilities. Additionally, they should maximize the use of joint training to exploit existing tri-service environmental health, occupational health, and preventive medicine expertise.

Preventive medicine training should become an integral part of predeployment preparations. Wide dissemination of any preventive medicine knowledge gained during deployment will prove invaluable in sustaining the health of the force and in preparing for future deployments. Creation of a universally accessible repository of DNBI data will enable access to valuable lessons learned, which must be considered for future deployments. These data should be used to develop models and scenarios for various deployments to identify and assess the preventable threats during predeployment planning and to use in exercise play.

Preventive medicine units need three kinds of equipment: automated information support

systems, equipment designed for rapid detection and on-the-spot evaluation of environmental and biological threats, and protective devices. Access to essential deployable computer systems with environmental exposure data, unit locations, and movement information is critical.

Preventive medicine teams will be highly deployable, light, rugged, and have user-friendly sampling and analysis equipment to maximize the ability of preventive medicine teams to do immediate exposure assessments. The teams will also continue to collect samples of potentially hazardous materials for any laboratory analysis and threat assessment that must be provided by joint theater health surveillance laboratories deployed to the operating theater.

DoD also needs an integrated health management system to capture and maintain required health, environmental, and biological information to support preventive medicine operations during deployment.

Infectious Disease Prevention

Infectious disease threats, based upon current medical intelligence, must be identified during the predeployment period. Diseases such as acute respiratory infection and diarrheal diseases are of great concern, particularly when many troops are brought together in staging areas. It is important to monitor health to gauge the predeployment health status of units and to identify preexisting (baseline) health characteristics of individuals. Unit health status is a measure of unit readi-

ness. The identification of preexisting health characteristics ensures that individuals who should be classified nondeployable are identified *before* deployment. Infectious diseases should be prioritized and monitored according to the threat each poses to the fighting force and the achievement of the force's mission. Countermeasures should be employed according to this established risk management process.

During deployment, vigilant monitoring of DNBI rates (e.g., sick calls, outpatient treatment, and hospital admissions) in relation to the numbers of disease vectors and existing local pathogens is required for effective planning and refinement of appropriate countermeasures to infectious disease. Furthermore, development of enhanced DNBI predictive models based on historical data, type of deployment, location of deployment, duration of deployment, and level of support are highly recommended.

Throughout the deployment life cycle, potential and emerging infectious diseases need to be addressed in a timely manner.

Appropriate infectious disease countermeasures must be implemented, particularly in the following areas:

- Food and water vulnerability
- Waste disposal
- Personal protection measures (i.e., immunizations, chemoprophylaxis, insect repellents, and uniforms impregnated with preventive compounds).

Infectious disease resulting from deployment may not be immediately apparent upon an individual's return, and previously deployed individuals may develop chronic conditions years after return. When indicated, returning service members may require debriefings, self-assessments, or clinical evaluations to screen for infectious diseases potentially acquired during a deployment.

All service members returning from theater should participate in necessary vaccination/chemoprophylaxis programs to minimize the threat of postdeployment infections.

Mental Health Casualty Prevention

Mental health problems and appropriate medical intervention throughout all phases of deployment are critical to mission success. Individuals identified at high risk for developing mental health problems are often associated with dual-service member families, use of psychoactive medications, frequent disciplinary problems, and domestic problems. Units at high risk include those anticipating a highly intense combat mission; a chemical, biological, or nuclear warfare threat; a long deployment; and units that have recently had a change in command. Several factors may signal a developing mental health problem. Four key indicators are increased use of health services, use of medication, disciplinary problems, and increased absences.

Mental health intervention may be critical to mission success. Preventive interventions for individuals and units include

- voluntary and command-referred counseling,
- family support services,
- support from family and friends through available media,
- activation of an existing spouse support network,
- personnel input into rest and relaxation (R&R) policies and schedules, and
- critical incident stress debriefings.

Historically, *postdeployment* mental health interventions for personnel returning from theater have remained a low priority. To change this, the stigma of mental health interventions must be minimized. Educational briefings aimed at mitigating the stress and anxiety that often follow a unit's return from theater are suggested. Those briefings may address personal finances, combat stress prevention, repatriation issues, general mental health issues (e.g., stress indicators and stress reduction), R&R suggestions, and positive information regarding the accomplishment of mission objectives.

Total Environmental and Occupational Health Casualty Prevention

Collection and analysis of objectively measured levels of total chemical, biological, and physical exposures are required to determine the risk of the total exposure load.

Environmental and occupational exposure testing and monitoring is a continuous process throughout the deployment life cycle. While these threats may be less pronounced during predeployment, they must nevertheless be addressed to identify preexisting (baseline) health characteristics of individuals and ensure that the force remains healthy and fit. Also, units that can identify and control environmental and occupational exposures in predeployment situations can carry that knowledge with them during deployments. Analysis of the operational environment is the key to determining environmental hazards.

Assessment programs should concurrently employ sound environmental and molecular epidemiological practices. For example, the collection of baseline cellular blood or urine specimens from individuals deployed to high-risk areas may be appropriate. Monitoring different types of health conditions should be prioritized according to likely or detrimental exposures. Occupational health and occupational medicine specialists should be present in all phases of deployment to readily assess potential toxic exposures in real time and identify and execute appropriate countermeasures.

Environmental threats are likely to vary considerably according to each deployment. Continuous reassessment of environmental threats helps ensure that commanders understand current risks and applicable countermeasures. Assessment methods require constant refinement and improvement to diagnose threats accurately and develop preventive interventions. To assess any threat accurately, vigilant objective documentation of all

toxic agents with linkage to health outcome data is required for both real-time and retrospective analyses. Immediate analysis and feedback are essential to rapid threat intervention. Joint epidemiological activities will require use of central data collection, analysis, and storage locations.

Exposures to toxins present during the deployment phase may be assessed by comparing predeployment and postdeployment health characteristics. It is essential that postexposure biomonitoring be conducted and compared with a preexposure baseline, when warranted. Exposure to environmental toxins may have short- or long-term effects. Long-term medical follow-up surveillance and care will be provided to individuals experiencing chronic conditions related to any documented environmental exposures.

Casualty prevention also requires increased emphasis on the health and safety of aircrews, weapon system crews, and other service members whose peak performance is critical to future military success. Preventable losses of combat and support personnel will depend on the ability of combatant commanders to ensure that occupational safety and health measures are rigorously adhered to. While occupational safety is a commander's responsibility, the medical community plays a crucial role in reducing preventable losses by developing mishap prevention measures, life support research and development, and materiel or doctrinal development to support operator and crew protection and performance.

Non-Battle Injury Prevention

Force Health Protection calls for the identification of all injuries likely to impede the attainment of mission objectives or result in hospitalization or recurrent injury. This identification should use all available sources of health intelligence to determine high-risk threats. Personnel at high risk of suffering NBIs include individuals

- with preexisting conditions (such as illnesses, injury profiles, past injuries, inadequate physical conditioning),
- participating in high-risk activities (such as sports with a high rate of physical contact), or
- participating in unfamiliar activities (such as manual material handling in preparation for deployment).

Other recognized hazards to personnel health include

- motor vehicle accidents,
- heat and cold injuries,
- fatigue and stress illness, and
- physical overtraining.

Both common and deployment-specific threats can be addressed by training provided before and during deployment, adequate lighting and work conditions for assigned tasks, proper clothing and equipment, and amelioration of fatigue or stress experienced by personnel.

Physical overtraining, lack of physical fitness, and participation in sports are major contributors to NBI. To minimize injuries resulting from overtraining or a lack of physical fitness, a baseline fitness program for *gradual* conditioning must be implemented. Sports that involve a high risk of injury should be limited or their threat otherwise minimized through use of protective equipment. Occupational hazards are another major cause of injury. These hazards can be minimized through the use of ergonomically appropriate lifting and packing techniques, enforcement of work-rest cycles, and training to avoid injuries likely to occur during a service member's career.

Establishment of probable NBIs requires historical clinical data on deployed personnel. For this reason, data from a deploying person's initial clinical evaluation must be made available to preventive medicine teams upon deployment. These evaluations can provide valuable physiological data, which are useful in future epidemiological evaluations. Historical NBI data should be used to develop casualty prevention simulation models for service operational training exercises.

NBIs can significantly impair the achievement of mission objectives. To prevent this, a risk management plan must emphasize general safety practices aimed at greatly reducing NBIs during the deployment cycle.

Risk Communication

Risk communication is essential to threat identification and casualty prevention. All risks must be clearly and appropriately communicated to deploying service members and to the chain of command. Command em-

phasis is an integral part of injury prevention. Commanders should receive feedback throughout the deployment life cycle from preventive medicine staff regarding preventable threats and countermeasures. Medical staff should ensure that the range of preventable threats is prioritized and commanders are made aware of the risks that could affect operations.

Healthcare personnel should be given all available information to enable them to deliver high-quality care to individuals during deployment and upon their return from theater. It is essential that DoD, the Department of Veterans Affairs, and civilian healthcare providers be alerted to possible diseases that may have been contracted by deployed personnel. Candid information concerning actual and probable DNBIs resulting from a deployment should be provided to all appropriate individuals.

Joint Health Surveillance

Health surveillance is the routine, standardized tracking of disease and injury incidence in meaningful rates, initial analyses and response at the unit level, and data-driven corrective actions taken at all levels. Military health surveillance requires standardization of methods, rates, data, and communication across services. Effective surveillance relies on collection and recording of healthcare, personnel, environmental, and operations data. Good analysis requires data to be accurate and linked to appropriate information systems to enable integration of that data. Support automation and data collection should begin at the lowest echelon possible.

Battle Injury Prevention

Although disease and non-battle injuries have historically caused most hospital admissions from the battlefield or other deployed operational settings, battle injuries remain very significant because of their severity. Services' medical personnel provide support for prevention of BI casualties by anticipating and preparing to counter the adverse medical effects of the enemy's operational threats. Typical support includes such areas as research on the best body armor for conventional weapons threats and the measures and substances required to counter biological, chemical, or nuclear weapons effects.

Conclusion

The second pillar, casualty prevention, protects the healthy and fit service member from environmental, occupational, and operational threats. DNBIs historically account for the majority of battlefield admissions. DNBI prevention is accomplished through actions by individual service members and commanders. Medical personnel identify potential threats, develop courses of action, and advise commanders of the risks and threat countermeasures. A productive casualty prevention program is an operational force multiplier.



FHP integrates new technologies with operational health service support and casualty management to provide exceptional healthcare throughout all phases of deployment.





Chapter 5

CASUALTY CARE AND MANAGEMENT

Future casualty care operational strategies include a limited forward presence with a lighter platform that is capable, flexible, and mobile. In support of these new strategies, the third pillar of FHP, casualty care and management, supports the warfighting commanders through essential care in theater and rapid aeromedical evacuation to definitive care without sacrificing quality of care. FHP integrates new and emerging technologies with operational health service support and more flexible casualty management to provide exceptional healthcare throughout all phases of deployment.

Casualty care and management encompasses four levels of combat care: first response, forward resuscitative surgery, theater hospitalization, and en route care. Each is discussed in a section below.

First Response

The most critical time for treatment of severe battlefield trauma is within the first 5 to 10 minutes after injury. FHP defines first response as *initial essential stabilizing medical care* rendered to ill or injured casualties at the point of initial injury or illness. It involves several tiers of “first responders,” which vary among the services. Collectively, these include self-aid, combat lifesaver, combat medic, field corpsman, independent duty corpsman, physician assistant, and physician. Most critical to all first-responder services is the combat medic/corpsman. Highly proficient first responders, like the combat medics/corpsmen, will be challenged to render aid rapidly to those who will benefit the most among highly dispersed and mobile forces in an austere and violent environment.

Tomorrow’s first responder is envisioned as the *primary* healthcare provider in frontline combat situations. The mission of first responders in 2010 will continue to be three-

fold. Their primary responsibility will remain the provision of immediate clinical care and stabilization of the *severely wounded* in preparation for their evacuation to the next level of care.

In addition to treating combat injuries, they will treat service members for common acute *minor illnesses* within their scope of practice.

Finally, a strong understanding of, and commitment to, preventive measures, including field sanitation and preventive medicine, will

- enable first responders to monitor implementation of individual and unit prevention responsibilities,
- advise commanders about required prevention techniques, and
- properly identify preventable health threats that require referral to preventive medicine professionals and units.

Forward Resuscitative Surgery

Forward resuscitative surgery (FRS) has its conceptual roots in innovative programs implemented by surgeons during World War II. Through the incorporation of new, advanced technologies and more sophisticated surgical practices, FRS has been continuously improved. Tomorrow's forward surgical capability will make intense use of technology and surgical practice to increase initial surgical efficiency and reduce unnecessary loss of life. Intrinsically linked to the new FRS concepts are new requirements for logistical and blood product support, including resupply, storage, distribution, and use of logistical and blood products.

The goal of FRS is to achieve the most efficient use of life- and limb-saving surgical procedures to attain clinical stability. FRS focuses on producing a limited window of clinical stability for this type of casualty, utilizing a comprehensive medical evacuation system to reduce lethality of battlefield injuries. It seeks to exploit the most advanced surgical technologies in a staged continuum of care to achieve this goal. Properly designed, equipped, and employed, FRS can provide a decreased forward medical footprint, while enhancing the capability to sustain life and limb.

Theater Hospitalization

Evolving national security objectives and rapidly emerging technological opportunities are reshaping our military forces and the strategies designed to meet those objectives.

The new fighting forces are expected to organize into smaller, less hierarchical units that will operate at greater distances from the enemy and employ technological innovations to achieve dominance through agility, precision, and potency. Providing in-theater medical support to these dispersed and highly mobile forces has challenged the military medical community to reengineer the delivery of casualty care.

Newly developed theater hospitals with modular configurations will be used to provide in-theater support. Theater hospitals will deploy as modules that provide incremental, increasingly less austere levels of medical capability as forces arrive in theater. Theater hospitals will be fully linked with evacuation, medical reporting, and medical situational awareness systems to operate as integral components of a continuum of care extending from the first-responder level to definitive care sites in the continental United States (CONUS).

FHP's new strategy is to provide health services support consistent with the future battlefield situations in which the 21st century warfighters will operate. This concept envisions a highly flexible and tailorable theater hospital capable of providing essential care to, and preparation of, patients being evacuated out of theater for definitive care. The theater hospital will be incrementally transportable with limited mobility and positioned in theater near a transportation hub for easy access to strategic evacuation.

Theater hospitals may be composed of three functional elements capable of independent

operation: a small initial response element capable of providing forward crisis-oriented care, the core theater hospital, and a mobile breakout element capable of enhanced stand-alone hospitalization for a short duration. This configurable theater hospital concept gives a single hospital the ability to support any number of different situations with various operational modalities and platforms while reducing the medical footprint.

En Route Care

En route care involves the medical treatment of injured and ill service members during evacuation between levels of care. Changes in technology and its employment enable a dramatic expansion of en route care in FHP doctrine. Achieving the levels of care needed to support JV 2010 will require significant enhancement in medical equipment, clinical capability using transportation platforms of opportunity, patient management and regulating systems, and clinical and operational training. FHP has established certain goals for delivering en route care to ensure that patients receive uninterrupted care from point of injury or initial illness until the patient arrives at a definitive-care facility in CONUS.

Historically, joint medical doctrine dictated definitive and convalescent care in theater to maximize a service member's ability to return to duty with evacuation as the last resort. In contrast, future deployable medical forces will provide essential care within the theater of operations in preparation for early evacuation utilizing a clinically capable *joint*

medical evacuation system. En route care teams will use state-of-the-art, lightweight, critical-care equipment to evacuate stabilized patients from a theater. The logistical and clinical requirements to support these stabilized (but not necessarily stable) patients will require expanded medical resources on evacuation platforms. The en route care team must be flexible and able to use a variety of transportation modes.

First responder, resuscitative surgery, and theater hospitalization medical personnel should ensure patients are properly prepared for evacuation, anticipating and addressing problems that may develop during evacuation, to the fullest that clinical capabilities, patient load, and operational scenarios will allow. En route care teams should be able to sustain the level of care initiated prior to evacuation without interruption and to prevent patients' conditions from deteriorating during evacuation.


Conclusion

FHP provides a major doctrinal shift in the care and management of casualties. FHP focuses on delivery of essential care in theater and evacuation to definitive care outside the theater of operations as soon as practicable. Theater hospitals provide another doctrinal shift. They are designed to be deployed to a location near a major transportation hub to allow easy access to evacuation assets. First responders will provide initial essential care, be intimately involved in advising commanders about unit and individual prevention techniques, and request help to control pre-

ventable threats beyond unit capabilities. Forward resuscitative surgery will provide life- and limb-saving surgical procedures to attain clinical stability prior to evacuation to definitive care. The clinical-capable joint evacua-

tion system will support movement of casualties from point of injury or illness to essential stabilizing care and early evacuation to definitive care outside the theater of operations.






FHP is the broadest
reformulation of military
medical needs in more than 50
years...the program will require
correspondingly broad
changes in the infrastructure.





Chapter 6

FHP INFRASTRUCTURE AND SUPPORT



The goal of FHP is to provide maximum protection to service members from medical hazards encountered during military service. The outcome, therefore, is a healthy and fit force, fully protected throughout the military operational continuum. FHP emphasizes health promotion and casualty prevention with casualty management initiatives that will incorporate highly capable far-forward casualty care; a smaller, more mobile, and flexible medical presence with a reduced bed capacity; and expedient preparation and evacuation of patients from the theater. Those capabilities rest on several supporting functions that, taken together, form the infrastructure of military medicine. The functions are

- training,
- logistics,
- information management/information technology, and
- research, development, and technology insertion.

With an emphasis on prevention, reliance on new technologies, and a shift from in-theater hospitalization, FHP offers a substantially different approach to military health. In fact, FHP is the broadest reformulation of military medical needs in more than 50 years. Not surprisingly, then, the FHP program will require correspondingly broad changes in infrastructure.

Training

Military medical readiness is founded on training military healthcare providers in the art of military medicine. As FHP develops, medical readiness will become much more than the readiness of “medics.” It must include fitness, preventive medicine, and self-care responsibilities of individual service members and commanders. The training challenge will span both the depth and breadth of several fields of knowledge.

It will include an understanding of how the combat environment affects service members and the related preventive and clinical interventions; hazard exposures and regional diseases; baseline clinical competence, including mass casualty management; clinical knowledge and skills specific to combat-unique injuries; and familiarity with platform-specific roles, supplies, and equipment.

Medical force training needed to support FHP requires a shift in focus to health and well-

ness and innovative methods of delivery. Streamlining of the military health system infrastructure, transition from hospital-based care to primary-care-based operations, and the loss of combat-trauma-experienced medics will create challenges for innovative methods of maintaining combat-related medical skills. Accomplishment of joint medical training standards and combat trauma skills will require partnerships with medical trauma centers from both civilian and federal health-care environments. Emphasis on common doctrine and joint training underpinning the pillars of FHP will provide the baseline for medical operations.

Readiness training in support of FHP should include the following:

- Hands-on medical training for medical and aeromedical personnel that is realistic, periodic, and focuses on the billet and the specific platform
- Military-civilian medical training partnership initiatives with combat-specific curriculum that focuses on combat-unique injuries and field clinical approaches, including methods to address the psychological toll experienced by personnel caused by combat stress and dealing with death
- FHP training for service members that emphasizes a healthy and fit force and casualty prevention in institutional, hands-on, and distributed learning modalities for all service schools
- Maximum use of virtual reality, multimedia, and interactive computer-based training
- Medical scenarios in military exercises to acquaint commanders with the risks associated with medical threats.

Logistics

Joint Medical Logistics 2010 (JML 2010) concepts and initiatives provide a 21st century platform for worldwide medical logistics support. JML 2010 concepts will lead to a medical logistics system characterized by

- application of best commercial practices;
- increasingly sophisticated information systems and electronic commerce processes, real-time demand analysis, modeling, and decision support;
- total asset visibility; and
- truly joint logistics organizations.

JML 2010 seeks to integrate the tactical, operational, and strategic levels so requirements, plans, and battlefield information are seamless throughout the combat service support structure. Initiatives are designed to eliminate service-specific overlaps and create an integrated, joint logistics support process. The more modular, highly tailorable logistics units will accomplish their medical commodity management mission using joint staffing. New information technology systems are critical in performing joint functions on a global scale.

As in other support functions, medical logistics already uses state-of-the-art commercial

business practices to achieve faster, more efficient responses to FHP needs. A significant shift—the most profound, in fact, since World War II—has occurred since Operation Desert Storm. Logisticians, historically focusing on the management of large inventories at multiple levels in the military supply system, are now focusing on real-time management of distribution systems. This concept of focused logistics integrates information, logistics, and transportation technologies to provide a rapid response to all emerging military needs. Those distribution systems are geared to move inventory rapidly from manufacturers to end users with an absolute minimum of stops along the way. There will be better tracking and tailoring of supply packages and miniaturization of medical equipment to meet military requirements.

To fully implement this new focus, several supporting technologies must come into play. Real-time global communications systems, communicating interactively with all participants in the supply chain, must be in place and available for global deployment. Medical logistics organizations require a vertically integrated data system linking long-range goals and objectives with day-to-day processes, unlike current horizontal information linkages.

JML 2010 will take the information infrastructure of the medical logistics community and provide a template for its modernization. By providing a process-aligned template for system modernization, the program will ensure the comprehensive upgrading needed to synchronize readiness needs with medical logistics business realities. Those informa-

tion systems will be built on a private-sector architecture and will make full use of electronic commerce capabilities rather than the existing DoD-proprietary data communication formats. Future systems will be based on joint requirements, common operating environment compliance, and full interoperability between the tactical, operational, and strategic levels and the commercial sector.

Distribution and supply chain management technology supporting joint medical operations also will be improved. Medical logisticians will not operate their own distribution networks. Instead, they will be integrated with other military and civilian distribution systems to achieve maximum responsiveness. Those networks will provide constant, real-time visibility of en route assets, and they will permit on-the-fly adjustment or redirection to reflect changing operational needs. Reliance on commercial sources will not be limited to CONUS-based firms, but will instead be extended to include the use of foreign sources of supply and support services. By definition, foreign sources of support will also include coalition or multinational partners, who may provide valuable adjuncts to U.S. force health protection capacity.

Other logistical support, such as maintenance and contracting services, also will rely on a hybrid of military and commercial capabilities. The dominant concept for maintenance and sustainment of medical forces in theater will be the same as that for wounded service members—minimal equipment repair capability in theater, supported by robust equipment evacuation and replacement. Modularity, embedded diagnostics, and

enhanced reliability will work to support this concept and improve the operational readiness of the medical force. The development of new or modified medical practices and protocols, coupled with right-sized inventories and just-in-time supply practices, will significantly reduce the medical logistics “tail.” Further, the ability to minimize life support requirements—generators, environmental control units, and power distribution systems—will reduce the need for fossil fuels through the use of alternative power sources. These initiatives will contribute greatly to reduction of the medical footprint.

Although generally regarded as a subset of the medical logistics system, the military will continue to operate its own medical blood products management system, consisting of collection, storage, and distribution capabilities. The blood management system will be integrally linked with the CONUS-based blood system as well as potential overseas sources such as deployed military populations and Red Cross assets.

Organizational and cultural change is occurring as well. By 2010, all medical logistics support will be fully joint, with elements of all four services working together or joined in a single logistics support structure. Flexible responses to unfolding operational scenarios will mean that operation of the medical logistics support organization will rest with joint commanders rather than any one parent service, and it will also mean that joint support will be available from the first to the last day of a military operation.

Two overarching principles exist within the complete reengineering of the logistics readiness system: first is to increase joint medical logistics activities at all levels and second is the need to create an integrated data environment to link those joint activities.

Information Management/Information Technology

The U.S. military is confronted with a fast-paced, technology-enhanced environment with requirements to rapidly integrate and transform data into information and knowledge. Advancements in technology have expanded the scope and capabilities of military forces, and information management/information technology (IM/IT) have become key elements for maintaining an effective joint theater of operations. To support this fast-paced battlefield of the future, the joint medical community must have interoperable communications and the ability to share large amounts of information.

IM/IT should not be viewed as a stand-alone system but rather as the glue to bond all FHP components by providing needed information. To support the enhanced theater of operations, FHP must push the envelope of medical information and technologies to ensure a seamless continuum of health services. Medical functional doctrine must project IM/IT integration into the operational environment and provide a seamless, interoperable communications infrastructure across

all services, other government agencies (e.g., Department of Veteran Affairs and Department of Health and Human Services), coalition forces, and the industry supporting the force.

Future FHP systems will be based on joint technical architecture, common operating environment compliance, and the Defense Information Infrastructure. They must have full interoperability among services at the tactical, operational, and strategic levels.

Total asset visibility of patients, medical units, and medical material will provide the information linkage to maintain momentum required in medical theater operations of the future. Implementation of the computerized patient record (CPR), including patient-care data collected in the field and a personal information carrier (PIC) supported by joint information architecture, will enhance health services throughout the operational continuum.

Leveraging New Technology Through Research, Development, and Technology Insertion

The exploitation of superior technology can enhance joint health services support now and through 2010. The ability to leverage technology that supports military health requirements and applications enables “war zone medicine” to be practiced with outcomes of lower morbidity and mortality for casualties. The benefits of these moderniza-

tion efforts not only enhance outcomes, but also may generate a significant reduction of the medical footprint in a theater of operations. Research, development, and technology insertion efforts can help achieve these goals by focusing on technologies that prevent illness and injury, reduce casualties or the severity of injury, speed up the evacuation of casualties out of theater, and enhance general medical capabilities.

While usually thought of as encompassing materiel solutions to medical requirements, leveraging technology can also provide training, organizational, and doctrinal solutions. In fact, DoD’s recent acquisition reform efforts have elevated these “nonmateriel” solutions to more prominent status—a status recognizing that the quickest, least expensive ways to leverage technology may not rely on materiel solutions at all. Research and development (R&D) efforts in the future will be increasingly focused on the development and fielding of nonmateriel technology solutions.

The reduction of casualties can be achieved through both medical and nonmedical programs. Nonmedical programs with significant medical input include initiatives such as improved body armor, enhanced laser protection, injury prevention devices such as orthopedic braces, chemical and biological weapons protection, and exposure protection.

Preventive medical initiatives include vaccines for endemic diseases and biological threats. Development of remote sensing for natural or man-made chemical, biological, or physical exposure hazards will enable com-

manders to address potential threat risks. Development of health-based 24-hour exposure standards is required to ensure the risks of exposures are neither overestimated nor underestimated. Other research required includes the scientific connection of militarily significant medical outcomes with the objectively determined exposure levels to better predict future risk and casualty levels for commanders. The use of improved hemostasis techniques and hemostatic agents represent significant new technologies designed to reduce battlefield mortality. R&D for whole blood substitutes with efficacious coagulant properties and drugs that reduce posttrauma organ damage may decrease organ and tissue loss and improve outcomes. Medical surveillance should consider use of scientifically validated biomarkers as they become available.


Increasing the speed of patient evacuation means that state-of-the-art, lightweight, and integrated en route care equipment is needed. That equipment must be operable on all future evacuation platforms. En route care equipment should be standardized throughout the system ensuring rapid equipment exchanges, forward resupply, common operator training, and enhanced maintenance capability. As technology advances are realized in both medical and nonmedical research, the ability of the medical community to enhance its capabilities is limitless. Basic biomedical research programs and technology insertions provide the foundation for medical capability superiority in support of FHP. Medical superiority will be a significant force multiplier and form the foundation of force health readiness. During operational

deployments, medical superiority ensures that health risks are not a limiting factor for commanders, enhances combat effectiveness, improves morale, and minimizes casualties, keeping service members fully engaged in their operational mission.

Other important areas for future R&D include improved modeling and simulation to estimate the types, numbers, and distribution of casualties of all kinds—combat casualties as well as those due to disease and non-battle injuries. Forecasts to estimate the treatment and evacuation needs of those casualties, their logistical support requirements, and other aspects of medical planning will be improved and will include scenarios to model a wide range of deployments, operational settings, and geographic locations. Present models, such as the Time/Task/Treater File used to model logistical support requirements, will be enhanced or redesigned to include more realistic and more flexible planning methods.

Leveraged technology provides important nonmateriel solutions to medical requirements as well. Technology supports and causes changes in doctrine, training, leadership tasks and styles, organizations, and service member systems (such as career management). Although materiel solutions form an important part of the R&D focus for Force Health Protection, research into training techniques and systems, metrics for health and force protection, and improved understanding of low-level health effects and thresholds are all equally important to the overall success of the FHP program.





FHP requires maximizing the effectiveness of the services' medical elements through jointly coordinated, comprehensively planned, mutually supportive medical operations.

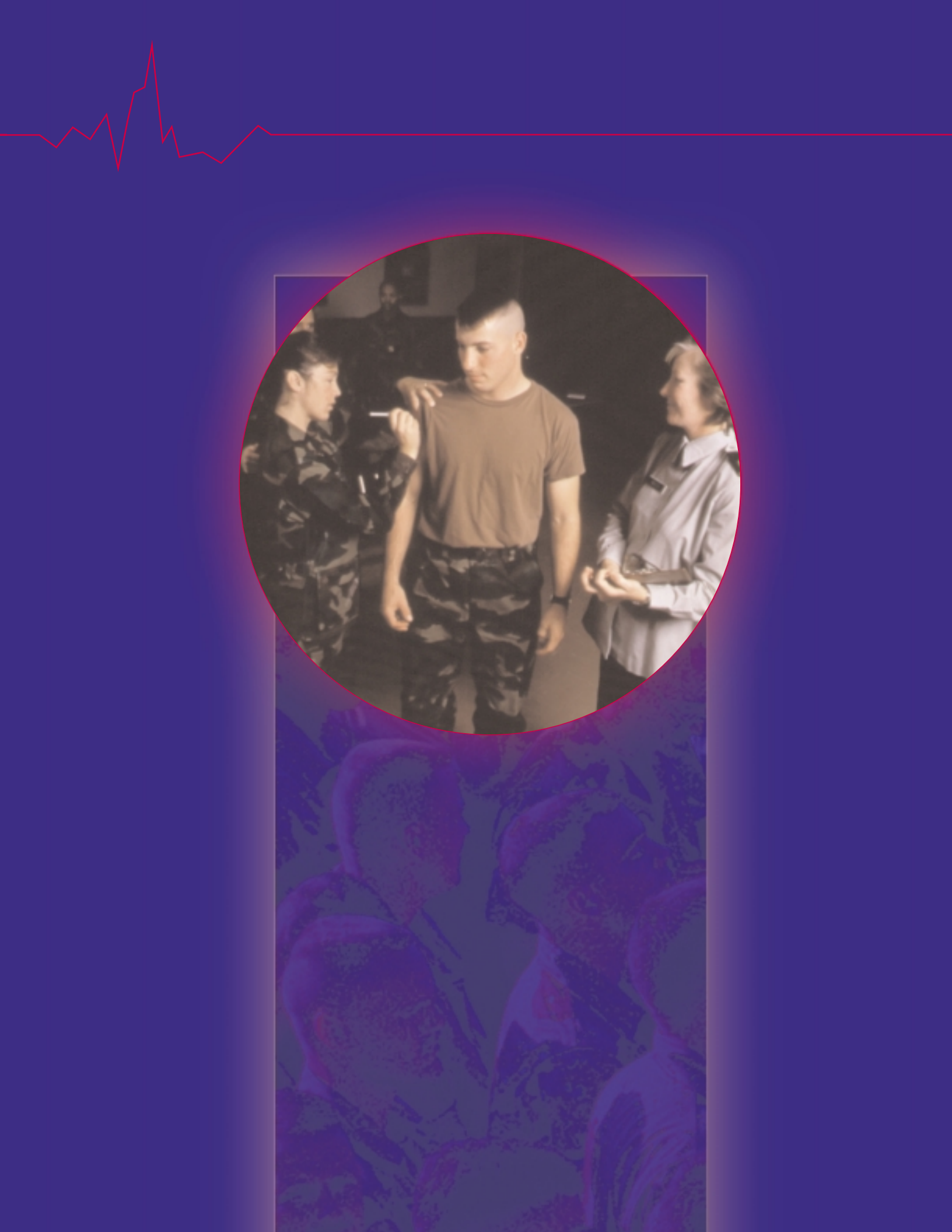


Appendix A

FORCE HEALTH PROTECTION CRITICAL SUCCESS FACTORS

Priority	Category	Critical Success Factors	
1	Healthy and Fit Force	1g1	Occupational and environmental health
			1g1a Identify, evaluate, and control potential chemical, biological, and physical hazards
			1g1b Monitor uncontrolled exposures
			1g1c Train commanders and members to identify and respond to hazard risks
			1g1d Develop improved monitoring technology to assess exposure levels
			1g1e Continue developing geographic and individual dosimetry exposure-monitoring system
			1g1f Monitor unit/individual response to risk via outcomes from exposures
2	Casualty Prevention	2a	Standardize technology/equipment/structure for real-time analysis and threat confirmation
3	En Route Care	7a	Develop reliable seamless communications (voice and data) supporting the evacuation system
4	Healthy and Fit Force	2d	Injury/disease prevention. Goal: in prevalence/incidence
			2d1 Identify preventable injuries and disease affecting mission readiness
			2d2 Establish standards for occurrence rates and acceptable behaviors
			2d3 Develop prevention strategies
			2d4 Implement clinic preventive services
			2d5 Provide injury rehab and mobile fitness facilities on deployments
5	Surveillance	3c	Develop a joint comprehensive standard health surveillance system (DMSS)
			3c1 Environmental/occupational capability
			3c2 DNBI capability
			3c3 Operational casualties capability
			3c4 Linkages to personnel exposure (location and duration information)
			3c5 Seamless garrison/field capability
			3c6 Health assessments and serum collection
			3c7 Command and community climate

Priority	Category	Critical Success Factors	
6	IM/IT	10a	Design, develop, and implement an integrated medical C4I infrastructure across the operational continuum for medical IM infrastructure
		10a1	Develop joint C4I medical doctrine and policy
		10a2	Develop medical IM/IT requirements and capacity planning process
		10a3	Design plan for networks, connectivity, and end-user device placement for medical operational platforms
		10a4	Identify priorities for funding and sustainment with DHP and service PPBS process
		10a5	Provide personal information carrier with basic capability
		10a6	Identify and provide system and network administration support in operational end strength
7	First Responder	4a	Standardize joint combat medic/corpsmen core competencies
8	Forward Surgery	5a	Develop joint medical doctrine/standards for forward resuscitative surgery
		5a1	Patient viability
		5a2	Resuscitative surgeries
		5a3	Define staged surgery
		5a4	Define evacuation stability criteria
		5a5	Postop/preop evacuation care
		5a6	Role of telemedicine
		5a7	Host unit support of FRS
		5a8	FRS team composition and employment
		5a9	Validation through exercise
9	Theater Hospital	6a	Develop joint doctrine for theater hospital operations
		6a1	Develop service-specific operational concept of employment
		6a2	Joint C3I for theater hospital
10	Logistics	6b	Program for acquisition (POM)
		9a	Continue development of the DMLSS readiness capability, including retail, wholesale, and operational level
U.S. Marine Corps	Training	8a	Develop training programs to enhance a healthy and fit force
SOUTHCOM	R&D		Develop small detection device for environmental toxins, pathogens, and vectors
TRANSCOM	En Route Care	7e	Develop networking system for multiple patient monitoring to allow monitoring of several patients simultaneously by one provider aboard an evacuation platform



The military health system
of the future must support
the evolving national
military strategy and the
strategies and tactics of
the 21st century.





Appendix B

GLOSSARY

Acute-care services—Medical services provided for patients with conditions having a rapid onset and that follow a short but severe course. Most battlefield care rendered after wounding, illness, or injury onset is acute-care service. The objective of acute-care service is to treat symptomatic manifestations. Other forms of care—rehabilitative, definitive, and comprehensive care, for example—have as their objectives the comprehensive elimination of all symptoms and their results. Acute-care service is delivered after symptomatic onset, which differentiates it from preventive care that is delivered before symptoms appear.

Battle injury (BI)—Damage or harm sustained during, or as a result of, battle conditions.

Biomonitoring—Sampling, surveillance, supervision, or direction of biological functions. The purpose of biomonitoring is to assess operational conditions and collect epidemiologic or biostatistical information. Biomonitoring allows FHP personnel, commanders, and planners at all levels to systematically assess and manage the health and wellness of an operational force, to plan FHP preventive services and medical interventions, and to equip and train forces to meet emerging health threats.

Chemoprophylaxis—The use of a chemical to prevent the development and transmission of an infectious disease or other health threats.

Clinical stability—A patient's condition characterized by a secured airway, control or absence of hemorrhage, treated shock, and immobilized fractures. Clinical stability is a necessary precondition for evacuation to the next level of care.

Commander in Chief (CINC)—A commander of a joint, specified, or unified command with responsibility for operational and tactical execution of military operations supporting defined national security objectives. CINCs command joint military forces to determine requirements and develop and execute military plans.

Computerized patient record (CPR)—A partial or comprehensive record of patient conditions, physiological indications, treatments, and treatment responses using digital or automated data-collection, storage, dissemination, and manipulation methods. A CPR may consist of a single record in one physical data storage location or it may consist of multiple physical records joined logically across a variety of storage or collection devices, including biomonitoring devices (see above) used in military operations.

Definitive care—Care rendered to conclusively manage a patient's condition. This normally leads to return to duty, rehabilitation, and/or discharge from the service.

Disease and non-battle injury (DNBI)—Injury or degradation of functional capability sustained by deployed forces or support elements outside of combat operations.

Disease incidence—The frequency with which a given disease occurs in a specific location, population, or operational setting.

En route care—Continuation of the provision of care during evacuation between levels of care with no clinically attributed compromise of the patient's condition.

Epidemiology—The branch of medicine that deals with the study of causes, distribution, and control of diseases in populations.

Essential care—Medical treatment and care provided within the theater of operations. This includes resuscitative care and en route care, as well as care to either return the patient to duty (within the theater evacuation policy) or begin initial treatment required for optimization of outcome and/or to ensure the patient can tolerate evacuation to the next level of care.

Evacuation—Removal of a patient by any transport means (air, ground, or sea) from a theater of military operations, or between levels of acute care service, for the purpose of preventing further illness or injury, providing additional care, or providing disposition of patients from the military health system.

Focused logistics—Precise application of logistics. The fusion of information, logistics, and transportation technologies to provide rapid crisis response; to track and shift assets even while enroute; and to deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical level of operations.

Force health protection—The health and medical portion of focused logistics.

Forward resuscitative surgery—Surgery performed as close to the point of injury as possible based on current operational requirements.

Hazardous materials—Substances, such as nuclear waste, military weapons, or industrial or military byproducts, that are potentially damaging to the environment and harmful to the health and well-being of military forces or noncombatants.

Infectious disease—Diseases caused by a pathogenic microorganism or agent, and capable of transmission by those agents between or among persons.

Joint Vision 2010 (JV 2010)—The conceptual template for how America’s Armed Forces will channel the vitality and innovation of our people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting.

Non-battle injury (NBI)—Injuries caused to military personnel during or incident to military operations that are not directly related to combat.

Operational tempo—The rate, frequency, and intensity of military operations.

Personal information carrier (PIC)—An electronic device that stores medical information about the individual who is wearing or carrying it.

Preventive services—Healthcare services provided prior to the onset of symptoms, illnesses, or injuries and designed to prevent, ameliorate, or lessen injury or illness.

Resuscitative care—Emergency medical treatment required to prevent immediate loss of life and/or limb and to ensure the stabilized patient can tolerate evacuation to the next level of care.

Self-aid—Minimal preventive or acute medical care provided by the patient him- or herself.

Stabilized patient—See entry under “clinical stability.”

Technology insertion—Systematic modernization or enhancement of devices or systems through ongoing capabilities upgrades. Technology insertion provides an alternative to military-specific acquisition of military systems.

Trauma—Serious or life-threatening injury to the body.

TRICARE—The managed care program operated by the Department of Defense. TRICARE consists of the direct (acute care) system, managed care support contractors, preventive medical capabilities, and other components of the military health system.

Wellness—A physiological and mental state characterized by full function consistent with a person’s optimal potential.



Appendix C

ABBREVIATIONS

BI	battle injury
C3I	command, control, communications, and intelligence
C4I	command, control, communications, computers and Intelligence
CINC	Commander in Chief
CONUS	continental United States
CPR	computerized patient record
DHP	Defense Health Program
DMLSS	Defense Medical Logistics Standard Support
DMSS	Defense Medical Surveillance System
DNBI	disease and non-battle injury
FHP	Force Health Protection
FRS	forward resuscitative surgery
H&FF	healthy and fit force
HEAR	Health Enrollment Assessment Review
IM/IT	information management/information technology
JML	Joint Medical Logistics
JV	Joint Vision
NBI	non-battle injury
NGO	non-governmental organizations
PIC	personal information carrier
POM	program objective memorandum
PPBS	planning, programming, and budgeting system
R&D	research and development
R&R	rest and relaxation
SOUTHCOM	Southern Command
TH	theater hospital
TRANSCOM	Transportation